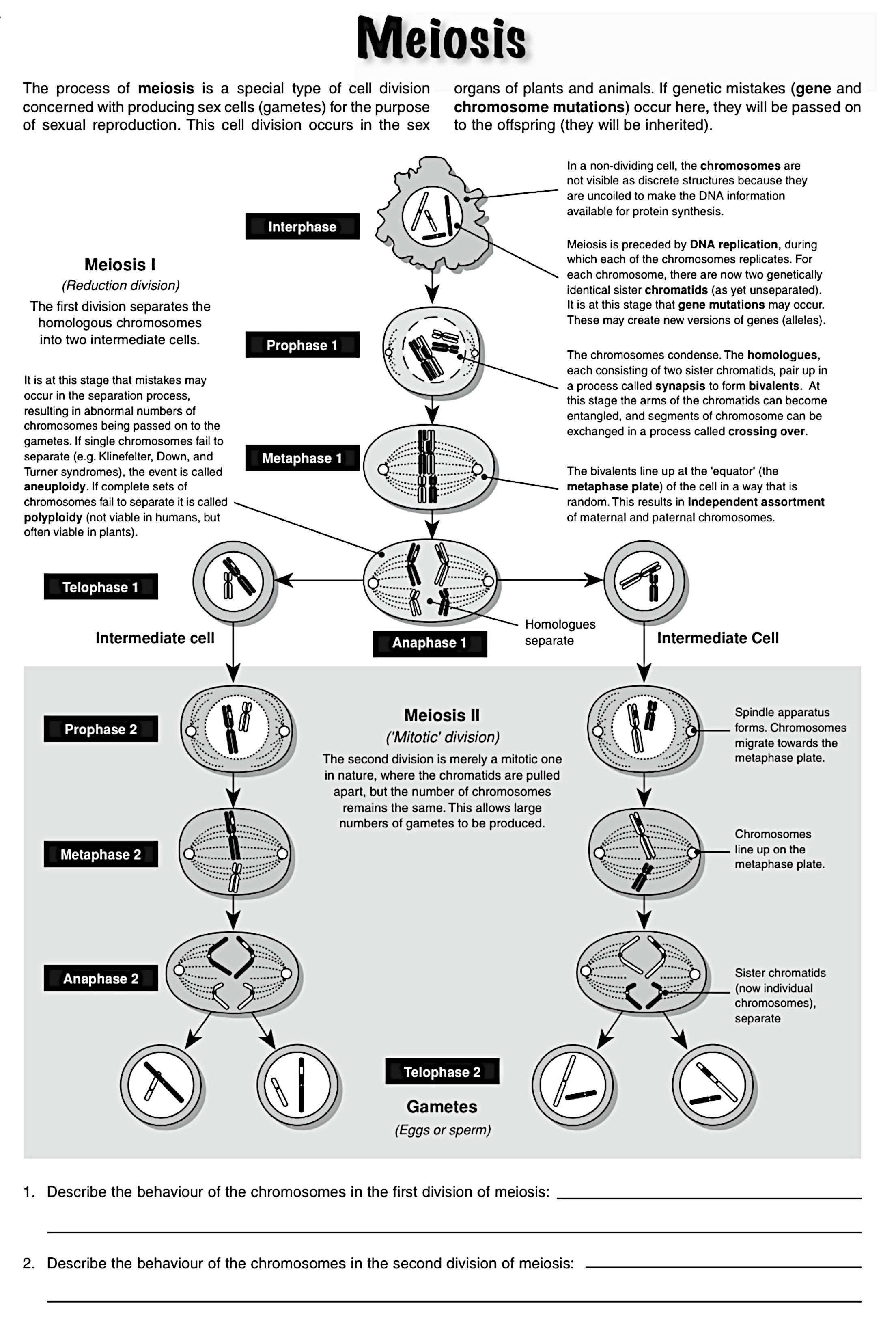
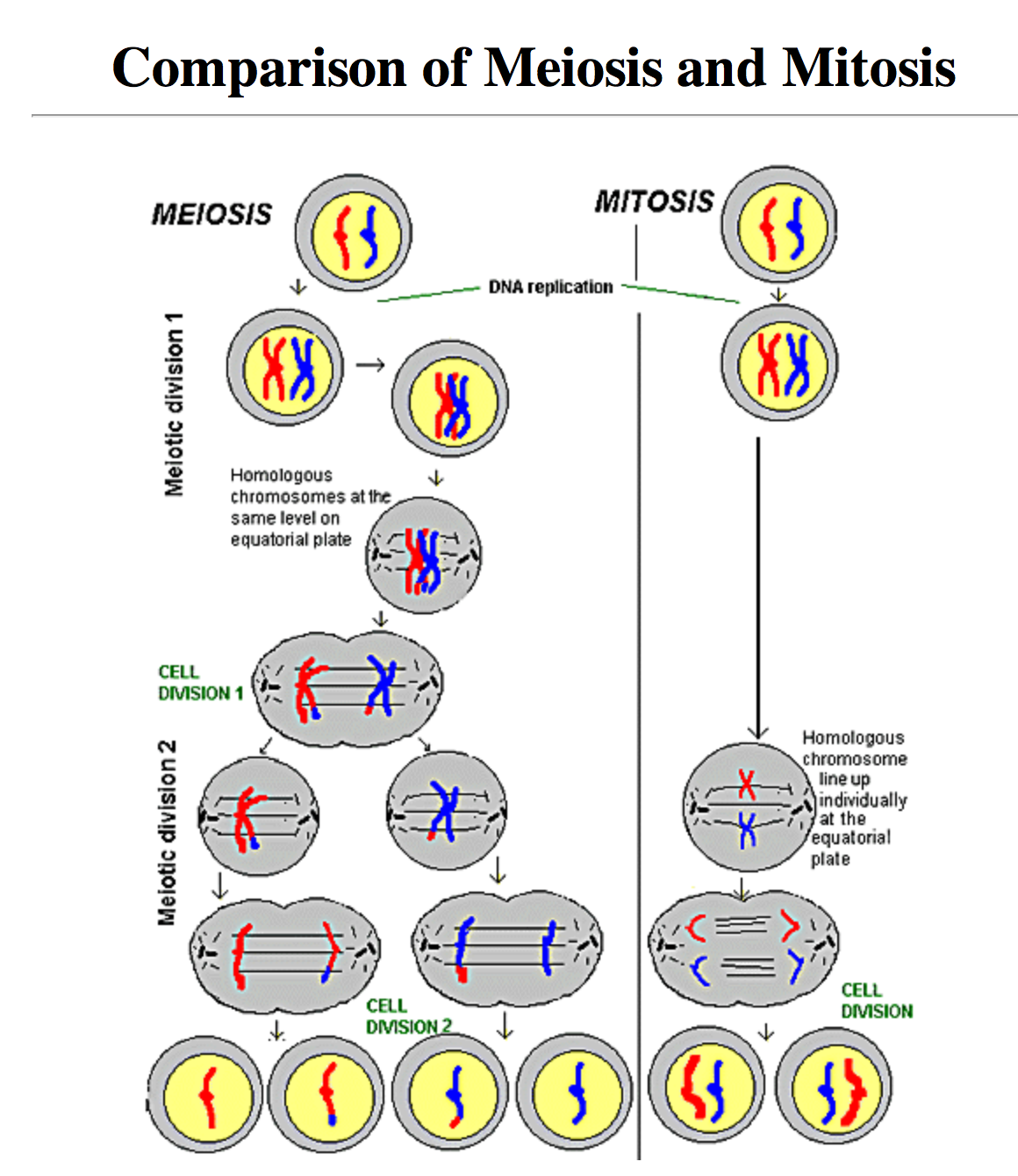
****

**Significance of meiosis and mitosis**

In mitosis the significance is the ability to produce genetically identical daughter cells. These will be needed for **growth**, for the **replacement** of damaged and destroyed cells and for **asexual reproduction**.

The significance of meiosis lies in sexual reproduction and to produce **variation in the offspring**. This variation is the key to a species ability to adapt to change in the environment and survive. Producing haploid gametes so that the genotypes of parents can be combined brings about **variation**. Homologous chromosomes line up **independently** on the equator therefore generating 2n different combinations of chromosomes in the gametes. Also crossing over takes place in Prophase I where new combinations of genes can be produced.

**Comparison of Mitosis and Meiosis**

|  |  |  |
| --- | --- | --- |
| **Feature** | **Meiosis** | **Mitosis** |
| Number of nuclear divisions |  |  |
| What do homologous chromosomes do in prophase? |  |  |
| What do homologous chromosomes do in metaphase? |  |  |
| What happens at anaphase I compared to anaphase in mitosis? |  |  |
| What happens in anaphase II compared to anaphase in mitosis? |  |  |
| Number of nuclei produced? |  |  |
| Haploid of Diploid nuclei produced? |  |  |
| Are daughter nuclei genetically identical or different to the parent nucleus? |  |  |